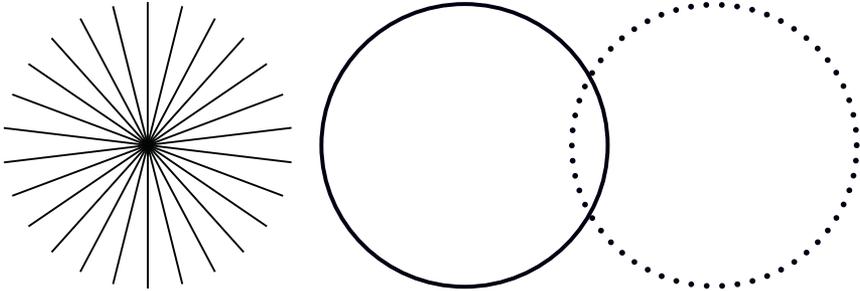


# Axon Laser Systems

Preinstallation Manual



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## 1.0 Purpose

The purpose of this document is to act as a generic reference for customers for the preinstallation requirements for the Axon laser systems and a Quick Start Guide on delivery.

This document is not intended to act as a replacement for the Axon Operator's Manual. Users are expected to refer to the Axon Laser Systems Operator's Manual (PN 1405386) before using the laser.



## 2.0 Scope

- This information is correct for the Axon laser systems as of July 2024.
- The intended audience is Axon customers prior to delivery and during installation of their laser system. Any further questions should be directed to the local Coherent Representative.

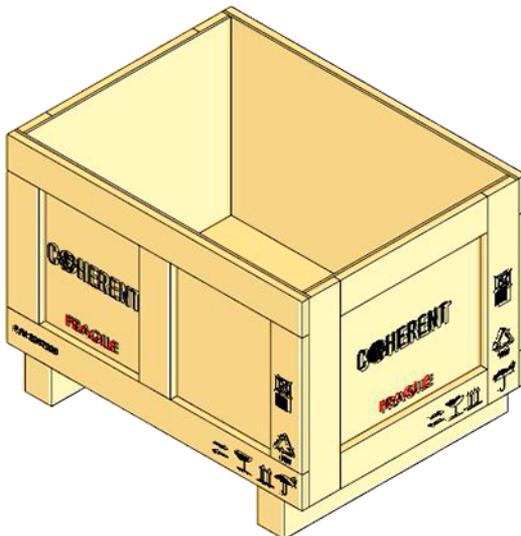
## 3.0 Site Preparation

The Axon laser system is designed such that unpacking and installation of the laser equipment is expected to be carried out by the customer. The customer should plan ahead for the installation, bearing in mind the following information.

### 3.1 Shipping Crate Dimensions

The system is delivered in a crate box per specifications below:

Item	Dimensions (L x W x H), mm	Weight kg	Material
Crate, including laser head and controller	800 x 600 x 620	53	Wood



## 3.2 Storage

- After the equipment is delivered, the box should be protected from extremes of heat/cold/moisture during storage.
- If the storage area is very different in temperature/humidity from the intended lab location, it is advised that the equipment be allowed to thermalize in the lab environment overnight before connecting power.

## 3.3 Access

The customer should pre-visualize how the laser equipment will be moved to the lab location. The box is not suitable for a one-person lift and must be moved with a pallet truck.



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### **NOTICE**

**Note that it is not recommended to carry the laser system up/down stairways. Access to higher/lower floors within a building should be via a lift (elevator) wherever possible.**

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## 3.4 Lab Requirements

### 3.4.1 General Environment

It is assumed that the customer will provide a suitable lab environment (see datasheet at [coherent.com](http://coherent.com)), an appropriate optical table for installation (see datasheet and Operator's Manual for component dimensions), and a standard PC.

### 3.4.2 Utilities

The system requires 1 x single-phase power outlet, 100-240 Vac auto-ranging, 50-60 Hz. Alternative fuses are shipped for 110-120 V and 220-240 V regions (see Operator's Manual).

### **3.4.3 Control PC**

A customer-provided Windows PC is required to run the system control software. Software installers are provided on our website at [coherent.com](http://coherent.com), and on the supplied USB memory device.

## **3.5 Location and Mounting of the Head & Controller**

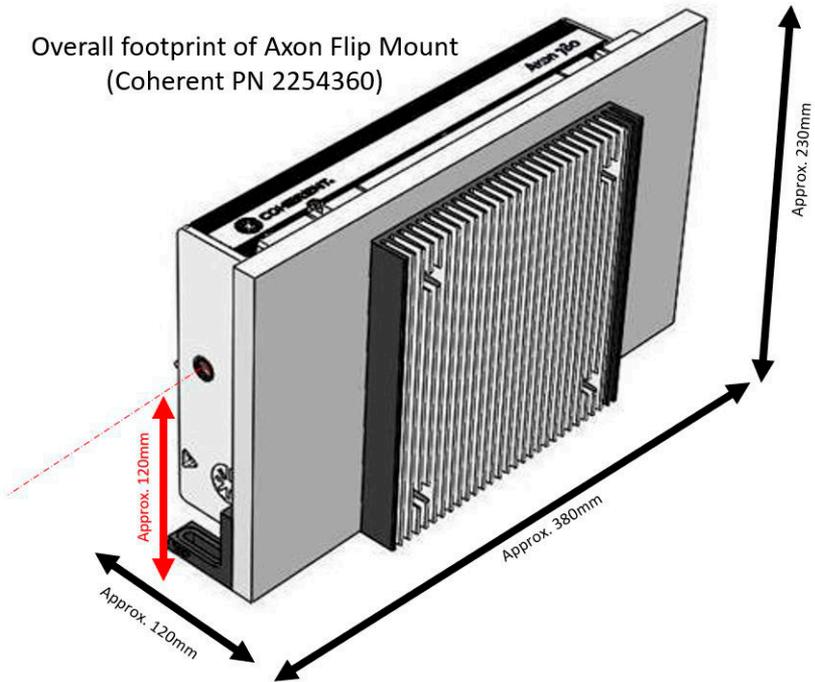
The customer should pre-visualize where the Axon controller and head will be located in the lab, noting the following points:

- The controller/laser head are connected with a 7 m umbilical, allowing flexibility in location. Note also that the umbilical cannot be disconnected at either end.
- The controller is subject to the same environmental specifications as the laser head.
- The system is air-cooled, and the controller requires a free flow of air at the front and rear. Clearance of 46 cm is required. Air flow direction is from front to rear.
- The controller is suitable for mounting in a 19 in rack system (note previous point for clearance). Rack mounting accessories are not supplied.
- Remember that physical access to the keyswitch may be required regularly.
- If the system is installed in an area with an unstable AC mains supply Coherent recommend using a suitable surge protector.
- The controller should be located away from air currents and hot/cold areas.
- It is expected that the Axon laser head will be secured to a stable platform, such as an optical table or breadboard.
- The laser head can be mounted in various orientations. Ask your Coherent rep for specific advice..
- The laser head should be located away from air currents and hot/cold areas.
- Refer to Section 6.0 on page 11. When mounting the laser head, consider access to the precompensation adjustment.
- A convenient head mounting accessory, which saves table space and brings the beam height to approximately 120 mm, is available

## Site Preparation

from Coherent under part number 2254360. Ask your Coherent rep for further information.

Overall footprint of Axon Flip Mount  
(Coherent PN 2254360)



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### **NOTICE**

Note that the head and controller umbilical cannot be disconnected.

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## 3.6 Electrical Consumption

Typical values:  $\leq 100$  W (key=Standby),  $\leq 200$  W (key=ON)

## **4.0 Installation**

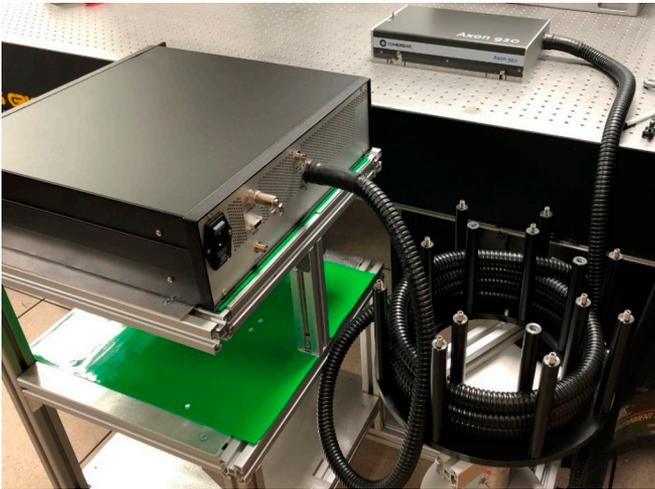
- The Axon laser system is designed to be customer-installable. Please consult the Operator's Manual before use, particularly Section 2 (Laser Safety).

Before receiving the Axon laser system, consider the location of the laser head and controller, with reference to Section 3.5 on page 6 of this document.

- Please refer to Section 11 of the Operator's Manual on Packaging before unpacking.



- Make sure that two persons are available when removing the system from the packing; one to take care of the head and umbilical, and the second to take care of the controller. Attention is drawn to this point since the head is relatively light compared with the umbilical and controller, and there is the potential for the head to be shifted around when the controllercontroller is being moved.
- Verify that the head is secure before removing the controller from the packaging.

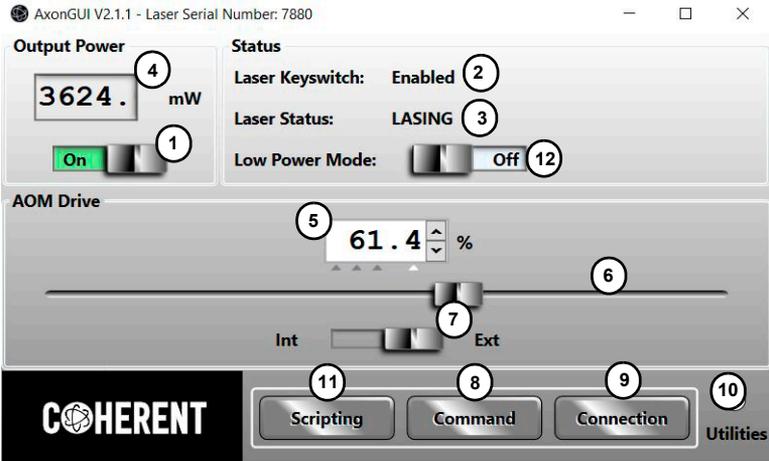


- It is recommended that the packaging is stored for potential future use.
- Verify fuse selection.
- Fit the external interlock defeat (supplied). For advice on external interlock circuits consult the Operator's Manual.
- Ensure that the laser output port is safely contained before switching on. Place the manual shutter in the closed position.
- Switch on mains power at the switch beside the power cord entry.
- Wait until the System Status LED has stopped flashing. The system is now ready to use.
- Switch the key from Standby to ON to initiate laser operation.

## 5.0 Software Control

Use of software control is not mandatory, however, some functions may not be accessible (e.g. TPC mode).

- Connection to the Axon controller is via USB or RS232 (cables are supplied).
- The Axon system can be controlled from a user-created interface, or a terminal program, using the guidance in the user manual.
- Alternatively, a user interface can be downloaded from the Coherent website. The intuitive GUI allows a customer to get started with the Axon system.



- |   |  |
|---|--|
| 1. Laser Enable Control                         | 7. Internal/External Switch <sup>a</sup> |
| 2. Laser Keyswitch Status                       | 8. Command Menu                          |
| 3. Laser Status                                 | 9. Connection Menu                       |
| 4. Laser Power (mW)                             | 10. Utilities Menu                       |
| 5. AOM Modulation Level <sup>a</sup>            | 11. Scripting Menu                       |
| 6. AOM Modulation Adjustment Slide <sup>a</sup> | 12. Low Power Mode                       |

a. Only available on the TPC versions of the Axon Laser Systems.

For a full explanation please refer to the Operator's Manual. It is anticipated the user will initially use the Axon GUI in order to get started, but may later decide to integrate the simple commands into their own interface.

## 6.0 Precompensation Adjustment

The precompensation is manually adjustable via a hex screw (2 mm) on the side of the head. Do not attempt to adjust/remove the lock nuts on the precompensation adjustment screw. Although it is anticipated that the precompensation will not be adjusted frequently, if regular access is expected then bear this in mind when deciding on mounting options.



## 7.0 Total Power Control (TPC)

The Axon products are offered in both standard and TPC versions. The TPC versions include an integrated Acoustic-Optic Modulator (AOM). This feature enables user-controlled setting and modulation of the laser power. This capability would normally have to be provided by the user or third-party integrator, therefore having this fully integrated into the laser head, with beam quality characteristics specified after the modulation device, adds significant value for the user.

Utilizing the TPC function is straightforward. The user supplies an analog 0-5 V input via the 'Mod In' BNC connector (input impedance 10 kohm) on the rear of the Axon controller and the laser output follows the user input. Fast modulation and complex input waveforms are possible.



**INNOVATIONS THAT RESONATE**



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